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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,464	05/31/2001	Takahisa Kikuchi	209294US-2	6875

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EXAMINER

LAU, TUNG S

ART UNIT PAPER NUMBER

2863

DATE MAILED: 11/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,464

Applicant(s)

KIKUCHI, TAKAHISA

Examiner

Tung S Lau

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-37 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-9, 13, 16, 17, 19, 22, 25, 31, 38 and 39 is/are rejected.
- 7) ☒ Claim(s) 6, 10-12, 14, 15, 17, 18, 20, 21, 23, 24, 26-30 and 32-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to election/restriction

1. Applicant's election with traverse of 10-21-2002 in Paper No. 8 is acknowledged. The arguments is found persuasive and the examiner withdraw the restriction requirement.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 19, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al (U.S. Patent 5,499,099).

Sato discloses a method that evaluates a substrate and alignment mode by obtaining a plurality of divided areas on a substrate, position deviation amount with reference position by a marks, (abstract, col. 3-4, lines 35- 4, fig 6a, 6b), evaluating a nonlinear distortion of the substrate to obtain correlation direction of an given area with the second substrate represent the position deviation of the divided area (col. 5-6, lines 27-36), grouping plurality of substrates of a nonlinear distortion of the substrate earlier to determine position information of the divided area (col. 4, lines 50—6, lines 50-67, col. 7-9, lines 60-8)relative position information with position deviation of the divide areas where the second number

Art Unit: 2863

is smaller than the first number (col. 8, lines 37-67), using addition to evaluate function to determine position information, N functions of divide area (col. 6, lines 1-6), using coordinate system, having linear component to calculate position information (col. 6, lines 16-37), n substrate where n is larger or equal to two (col. 6, lines 15-50).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claims 5, 7, 8, 9, 13, 16, 17, 22, 31, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (U.S. Patent 5,499,099) in view of Irie et al. (U.S. Patent 5,808,910).

Sato discloses a method including the subject matter discussed above except the use of statistic computation, with three specific areas of samples, with weight parameter. Irie discloses the use of statistic computation (col. 3-4, lines 25-22), three specific areas of samples (col. 4, lines 23-53), with weight parameter (col. 15-16, lines 25-40), to have a high accuracy and high speed even though a sample has a nonlinear error (col. 3, lines 19-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sato to have the use of statistic computation, with three specific areas of samples, with weight parameter taught by Irie in order to have a high accuracy and high speed alignment system even though a sample has a nonlinear error.

b. Claim 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sato and Irie as applied to claims 1, 19, 22, and further in view of Tomimatu (U.S. Patent 6,239,858).

The Sato and Irie combination disclose a method including the subject matter discussed above except the use of correction map technique. Tomimatu discloses the use of correction map technique (col. 1, lines 60-64), to reduce nonlinear error generated from semiconductor substrate (col. 2, lines 21-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sato and Irie to have the use of correction map technique taught by Tomimatu in order to reduce nonlinear error generated from semiconductor substrate.

Allowabl Subject Matter

4. Claims 35-37 are allowed.
5. Claims 6, 10, 11, 12, 14, 15, 17, 18, 20, 21, 23, 24, 26-30, 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is an examiner's statement of reasons for allowance:

Regarding claim 35:

The prior art of record does not disclose or suggest the claimed combination of overlay analysis step of analyzing overlay error information, measured beforehand, of at least one specific substrate that has been through the same process as the substrates.

A first judgment step of judging, based on the analysis results, whether or not errors between divided areas on said specific substrate are predominant, the errors between divided areas being caused by position deviation amounts having different translation components from each other;

A second judgment step of, when in the first judgment step it has been judged that said errors between divided areas are predominant, judging whether or not the errors between divided areas have a nonlinear component;

Art Unit: 2863

A first exposure step of, when in said second judgment step it has been judged that the errors between divided areas have no nonlinear component, with using an arbitrary exposure apparatus.

Calculating pieces of position information used to align each divided area with respect to a predetermined point, by a statistic computation using measured position information obtained by detecting marks corresponding to each of a plurality of specific divided areas on each of said plurality of substrates and sequentially performing exposure on said plurality of divided areas of each of the plurality of substrates so as to form the pattern on each divided area, while moving said substrate based on the pieces of position information; a second exposure step of, when in the second judgment step it has been judged that the errors between divided areas have a nonlinear component, with using an exposure apparatus that can perform exposure on substrates correcting the errors between divided areas, sequentially performing exposure on said plurality of divided areas of each of the plurality of substrates so as to form said pattern on each divided area; and a third exposure step of, when in the first judgment step it has been judged that errors between divided areas are not predominant, selecting an exposure apparatus capable of correcting distortion of the projected image and, with using selected exposure apparatus, sequentially performing exposure on plurality of divided areas of each of plurality of substrates so as to form pattern on each divided area.

Claims 36, 37 are allowed due to their dependency on claim 35.

Application/Control Number: 09/867,464

Art Unit: 2863

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 703-305-3309.

The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 703-308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841 for regular communications and 703-308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TC2800 RightFAX Telephone Numbers : TC2800 Official Before-Final RightFAX - (703) 872-9318, TC2800 Official After-Final RightFAX - (703) 872-9319

TC2800 Customer Service RightFAX - (703) 872-9317

TL



**BRYAN BUI
PRIMARY EXAMINER**

1-13-02